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Nanotech funding on House fast track

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WASHINGTON - The House of Representatives is poised to make a large commitment today to a tiny technology that could have a big impact in Silicon Valley and throughout the U.S. economy in years to come.

The Nanotechnology Research and Development Act authorizes \$2.135 billion in federal research money over the next three years for a burgeoning field with the potential to revolutionize everything from medicine to industrial manufacturing to the limits of computer memory. With strong White House backing and wide bipartisan support, the legislation is expected to easily pass the House today and is on a fast track to pass the Senate in the coming weeks.

Nanotechnology, which involves manipulating matter at the level of individual atoms, already has produced stain-resistant fibers used in khaki pants and super-strong, lightweight ``nanocomposite'' materials used in running boards on some sport-utility vehicles.

Researchers are working on more far-reaching uses, such as dramatically reducing the cost of computer power while increasing its speed. In the next decade, the technology could allow the storage of the entire collection of the Library of Congress on a device the size of a sugar cube, or the development of computer circuits so small that thousands could fit on the end of a human hair.

``Vast' potential

``The potential for this technology is so immense and vast, it probably exceeds anyone's imagination," said Rep. Mike Honda, D-San Jose, the lead Democratic sponsor of the bipartisan legislation. ``It's going to be a big shot in the arm for the economy."

Silicon Valley is one of several regions of the country that are developing into nanotechnology research hubs, along with Southern California, Boston and Chicago. Hewlett-Packard and Intel are among the major companies doing research in the field, Stanford University is a significant player among academic institutions, and NASA's Ames Research Center in Mountain View is home to the federal government's largest nanotechnology center.

The amount of federal money, which will mostly flow to universities for basic research, is significant, experts in the field said. But perhaps more important is that the legislation shows a strong national commitment to nanotechnology as the United States battles Japan and the European Union for leadership in developing what some tout as a more revolutionary technology than the Internet.

``I think it is the future of technology across the board," said Phil Bond, U.S. undersecretary of commerce for technology. ``Once you get down to the atomic level, you're touching everything. It's terribly important for American leadership in the technology age that we lead in this space, and I think we will."

Nanotechnology is named for the minute scale in which the field operates -- the level of a nanometer,

which is one-billionth of a meter or 100,000 times narrower than the width of a human hair. By manipulating the properties of matter at such an elementary level, the possibility exists to do amazing things, like create materials 100 times stronger than steel at a fraction of the weight or make microscopic computers.

Like the development of electronics, nanotechnology has the potential to change manufacturing and other processes across a wide range of industries, said Mark Modzelewski, executive director of the NanoBusiness Alliance, an industry trade organization.

``Anything that's made will eventually use nanoscience properties," he said.

Like biotech, the technology is heavily dependent on government research funding because of the sophisticated science involved and large capital costs for equipment.

``You don't tinker in your garage with your home electron microscope," said Steve Jurvetson, managing director of Draper Fisher Jurvetson, a Redwood City venture capital firm that has invested in 14 nanotechnology start-up companies.

Multiplier effect'

Scott Cooper, manager of technology policy for Hewlett-Packard, said increased federal funding and a strong national commitment could do for nanotechnology what it did for biotechnology about a decade ago. Money flowing into research universities could help attract graduate students who then go on to form their own companies in the field.

``Federal research has a multiplier effect," Cooper said.

The nanotechnology legislation in Congress is an outgrowth of the National Nanotechnology Initiative started by former President Clinton in 2000 and expanded by President Bush. Bush's proposed 2004 budget includes \$849 million for nanotechnology research, which is part of the \$2.135 billion that Congress is expected to authorize.

The largest chunk of the 2004 funding, \$249 million, would go to the National Science Foundation, which gives grants to universities and research institutions. The second-largest amount, \$222 million, would go to the Defense Department, which envisions an important role for nanotechnology in developing tiny sensors to protect soldiers against biological and chemical attacks.